

Does Ecological Agriculture Offer a Way to Narrow the Widening Gap in the Human – Nature Relationship?

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ABSTRACT

This article provides an opinion on world agriculture and the apparent disconnection between humankind and the natural world. The paper argues that the value system, influenced by the dominant economic and scientific culture of the past century, needs to change. Central to this value system is the belief that humankind is dominant of nature. In such a context, we, the authors of this article, challenge the often-used terms such as custodianship, stewardship, and trusteeship. We, instead, propose a new relationship – that of membership – where the ecological tenet of oneness with nature is appreciated, understood, and respected.

Critical to this process is the need for a change at the ontological level and the emergence of a new understanding between humans and the biophysical world. Bringing about change is difficult because the default mechanism for most in the developed world is to maintain the status quo and to defend existing thought patterns. The environmentally damaging pathway of mechanistic and reductionist thought manipulates nature to serve human needs. Instead of continuing along the well-trodden pathway, we propose that the natural elements need to be used prudently and not exploited indiscriminately by practising a more benign form of agriculture that will be based on sound ecological principles. The key principle would be to recognize, value, and preserve the unity of all living and non-living things, and their interconnectedness.

Key Words: Ecological Agriculture, Ecocentrism, Sustainability

INTRODUCTION

Modern industrial agricultural practice, in essence, works on the formula: 'produce more in less area'. Technology's ever-widening capabilities have enabled human society to apply this formula with great success in the last few decades. Power, politics, and governance have transformed societies unrecognizably and their food production activity; intense industrialization of agriculture has entailed massive levels of corporatization, involving extensive social and other costs (Dahlberg 2001).

Agriculture as a human activity extends its 'tentacles' into every aspect of human experience. Modern-day agricultural problems are so complex that they involve multiple, interacting subsystems. Nonetheless, contemporary agricultural practice recognizes the complexity of the problems and also recognizes that the problems can be solved neither by applying a purely

scientific approach, divorced from economic and management realities, nor by a purely economic approach, ignoring scientific trials and practice. Contemporary agricultural practice blends management, science, and economics to achieve its most desired outcomes: productivity and profitability. However, integrating the scientific and economic approaches through efficient technology, clear economic goals and clever management strategies has its downside as well; it has contributed to the degradation of the little productive land available (Gardner 1996, Altieri 1999). Human society expected to achieve a desirable outcome through the integration of approaches, but, in reality, the economic criteria dominated, and continue to dominate, the process. Carson's *Silent Spring* (1963) made a trail-blazing effort to recognize and validate the extent of the critical and long-term damage those agricultural processes can cause to the biophysical environment. Response of the environmental economists, in the

1960s, offered the sustainability model, which, they proposed would enable the human society to achieve both ecological and economic goals (see Raman et al. 2000, for several references). The sustainability model was meant to enable the Earth to provide the resources and the produce for humans for a much longer period than what was actually possible with the agricultural practice driven solely by economic factors. Recognition of past mistakes enabled human society to develop the concept of sustainability. Efforts were made to refine the guiding principles for (i) promoting equity within and between generations of humans, (ii) maintaining the Earth's life-support systems, and (iii) improving individual and community wellbeing (Hill 1998, 1999). Environmental economists saw sustainability as a model to maintain consumption at a constant level forever. Was that possible? If yes, then the environment would have been sustained, after all, with no reasons to convene the Earth summits.

The sustainability model prompted the modern industrialized societies to investigate the pre-industrial civilizations to obtain smaller models to manage human-induced environmental modifications, such as climate change. Learning from those investigations made the industrialized societies realize that it was not so much climate change that caused problems, but (i) the entrenched modes of adapting to change caused problems, (ii) responsiveness to change depended on individual and collective choices, which were, of necessity, shaped by the past, and (iii) the development and use of knowledge was the main mechanism for survival in conditions of rapid change, which meant that adaptation to changing conditions depended on the perception and interpretation of the signs of impending change, and on the timely development of knowledge, technology, and organization in reaction to those signs (Pain 1994).

A WIDENING GAP IN THE HUMAN — NATURE RELATIONSHIP

According to evolutionary history, humans are an integral part of natural ecosystems. This may not be readily acceptable today, but at least this is how it was until industrial revolution took place in Europe. Before the industrial revolution, all organisms — including humans — remained integral components of a complex web and a well-synchronized food chain driven by natural/ecological forces. An important departure, however, has been the increase in human numbers far

beyond the level that could be supported by natural ecosystems (Brown 1995). Human society managed the increase in population to a modest extent by dispersing to other, less-populated areas of the world, by learning to adapt to the newly colonized areas and by beginning to dominate their land and water ecosystems. The ability to manage depended on a number of endowments, two examples being the ability to adapt to a variety of habitats and the ability to develop effort-saving technologies.

Agriculture proved an effective method for supporting an ever-increasing number of people. More land was needed to meet this contingency; so more and more natural ecosystems were modified beyond the point of recovery. Recognizing the efficiency of fossil fuels as an energy source, humans developed complicated techniques of production to make human life and lifestyle comfortable, thereby consuming more natural resources and energy (Flavin and Lenssen 1994). Simultaneously, colonial expansionism further intensified the impact of Western societies on the natural environment across the globe, resulting in settlement, colonies, trade and environmental domination. Economic historians view Europe's imperial expansion as the bringing of civilization to less fortunate people; environmentalists, by contrast, see it more as a wave of destruction of the natural world and its rhythm of activity (Simmons 1989). The application of new techniques (e.g., intense irrigation practice and its impact on regional hydrology (Serageldin 1995)) and complex production processes of industrial agriculture (Malcolm et al. 1996) depleted Earth's finite natural resources extensively. This was labelled progress: the cause being the ingenious capacity to respond to challenges by engaging problem-solving skills; the effect being the capacity to modify and control the environment to meet human demands (Ponting 1991). From an ecological angle, however, the processes involved in achieving progress appear as a set of interconnected and complex, environmentally damaging steps to meet the demands of humankind; Gardner's (1997) statement substantiates this: "By 1989, more than 11% of the world's cropland was already severely eroded." Progress became intimately linked with development, the perception of moving towards a 'developed' society. Similar to progress, development has been hailed as something not only desirable, but also inevitable. 'If more people are to be supported, greater material requirements have to be met' became the dictum. The impact of such dicta can be seen in the way the pristine rain forests of the Amazon region of Brazil have been 'modified' over the

last few decades (Worster 1988, Durning 1993). The Brazilian example is equally true of other developing countries as well.

Such aggressive development initiatives throughout the 20th century have led to a growing sense of disillusionment, encouraging the human society to place greater value on preserving the natural environment and to practise an ecologically sensitive agriculture. However, the concerns generated since the 1960s, after Rachel Carson, have not succeeded totally in modifying or replacing the perception of a natural world as being exclusively for human exploitation. A popular view sees continued industrialization and further economic growth as a critical prerequisite for any environmental 'improvement'. Despite the cautionary voices of environmentalists and many scientists 'it is business as usual' for countries that allow clearing of rainforests; the largest industrial power declined to support global action to reduce greenhouse gases in 1992. Indeed, many of the implemented 'remedial' measures, such as wildlife and natural area conservation in specific regions, licensing pollution levels, offering of 'small' support to organic farmers, appear more as ways of bracing the existing economic system than as being the initial steps towards anything new or different (Gare 2001). What do past experiences suggest about the stability and sustainability of human society as it has developed in the industrialized nations and in the partly industrialized, but still mainly agricultural, 'developing' nations?

How far will humans be going in their assault to conquer nature? Human society has overconfidently assumed that its evolution is, for some reason, independent of that of the natural world. Such an assumption is largely founded on the premise that the natural world exists for human exploitation. In the process, the environment has experienced an unceasing pressure from humans – mostly for momentary benefits – in defiance of nature's principles of ecology: through altered landscapes, organisms either driven to extinction or introduced into new environments and thus disrupting natural ecosystems; and unwanted outputs of the industrial systems dumped into natural ecosystems. Worst of all, efforts to 'create' genetically modified crops (GM crops), which have a high potential to endanger natural systems (Rissler and Mellon 1996), are being pushed for economic reasons. Ultimately all these actions, meant to subjugate nature, will proliferate second and subsequent generation problems – adverse reactions to adverse reactions – as the effects of each perturbation never occur in isolation.

A review of human history indicates that many earlier societies and civilizations believed themselves to be sustainable, but sooner or later collapsed beyond recovery (Culbert 1973, Allen 1988). Oft-heard rhetoric claims that 'some damage is inevitable, some depredation needs to be tolerated'. But, the question is what does 'some' qualify and how much does 'some' quantify?

It is hard not to conclude that dominant cultures always approach nature in this way, because that is what the attitude of wanting to remain dominant leads to. As an economics-centred society, the West legitimizes its actions towards the land, water, sky, and organisms other than humans. The Eastern cultures offer different interpretations, but as a general rule, these have been far less influential than those of the West. One fundamental issue addressed by the Eastern cultures is the relationship between humankind and the rest of nature, which recognizes humans as an integral component of nature. In principle, the Eastern cultures do not attribute a higher value to humans than to the remainder of the organisms (Raman 2002). A common thread among many of the non-European worldviews is that they do not attribute a dominating role for humankind. Taoist thought in China emphasizes that both the individual and the society need to live in harmony with the natural world (Allendorf 1997). The Indian tradition believes that all creatures, including humans, are part of a 'suffering' world; the question of human rule over the natural order does not even arise; rather, the natural world itself is the primary presence of the sacred, the primary moral value (Nelson 2000). Eastern thinking, in general, proposes a less aggressive approach by humans to the natural world: humans are only a small part of a much greater whole and their intellectual capabilities set them apart. Using the ability to think and differentiate, humans need to direct themselves to the goal of enlightenment, to act wisely by participating with the remainder of the organic world. In this framework, the technologically primitive hunting and gathering people – the tribal communities – are much closer to the natural world, than are the technologically advanced mainstream society. Tribal societies recognize their world as simply made up of animals, plants, humans and inanimate objects, all set in a single whole without any distinct statuses (Pollard 1968).

The idea that humans have a responsibility to preserve the natural world or remain its trustees (see Easwaran 1989) – also referred as stewards and custodians (Schumacher 1974) – can be traced through a

succession of thinkers. The role of humans as the trustees or custodians of the world and its components remained a minority tradition in European thought (see Easwaran 1989, for comments on trusteeship). The terms – trustees, stewards, custodians – do imply and convey a tone of human arrogance embedded in the very act of assuming that the humans can assert a relationship over the rest of nature. Nevertheless, the custodial relationship recognizes a value, seeing the earth as one natural entity, with each of its components having a role and purpose. Particularly after Charles Darwin's *Origin of Species*, the Western perception of the world changed dramatically to recognize the world as a bountiful repository exclusively for human gain and benefit (Passmore 1974). The accelerated rate of scientific inquiry during this period in Europe reinforced such thinking, known as the domination worldview. The mechanistic views of the world proposed by René Descartes, Isaac Newton and Francis Bacon lent strong support to this thinking.

Belief in human potential and its unlimited scope for progress came to be accepted as a fact, which remained largely justified because of materialism and its consequence, progress. Technology made human lifestyle easier. In Eastern Europe, Marx and Engels made powerful impacts with their idea of the inevitable progress of human society through the proletariat and socialism. Although the religious element gradually diminished from much of European thought, faith in the evolutionary and intellectual superiority of the human species remained strong. Exploitation of the natural world was considered to be a perfectly natural way of improving a rough, unfinished, natural environment (Hayward 1994).

BRIDGING THE GAP

In the context of the global panorama of humankind and the broadest patterns of human intent, economic thinking has become the dominant mechanism to appreciate and engage with the natural world. To understand the modern view of the relationship between humankind and the natural world, it is important to look beyond a society's professed economic system, the hidden assumptions of economics and the value system it enshrines (Martin 1996, Lumley 1997). Irrespective of different economic models – either a market-dominated economy of the West or a centrally planned one of the socialist world – the attitudes towards the natural world are not

different. Although GNP offers a measurable index of the production, consumption, investment and success of an economy (Hueting 1990), it is not seen as a means of establishing the desirable level of economic activity (Abramowitz 1997). The most radical dissent from classical and liberal economics came from Marx and Engels, who argued that the value of any product came from the amount of human labour put into its production. This notion rejects outright the intrinsic value of natural elements. Most mainstream economists do not anticipate the immediate and future consequences of production and consumption, and hence do not offer any solution to questions on pollution and damage to the environment. Nonetheless, Schumacher's plea (1974) for an 'as-if-people-mattered' approach, and Henderson's criticism (1978) of the failure of economic thought to take humanity's dependence on the natural world into account are worthy of recall.

Although generalizations are risky, it may be good to generalize for reasons of better clarity: the anthropocentric worldview is the one that perceives the human species as a superior organism, that harnesses science in the pursuit of technological solutions and that pursues progress and development. According to postmodern thinking, the humans are currently living in a period of ecocrisis (Martell 1994). If the current pattern of growth and progress trajectory continues, the likely outcome will be the collapse of our social and natural ecology. Analyzing the dominant socioeconomic and intellectual paradigms, affirmative postmodernists offer a few reparatory options that can facilitate 'development' of alternative ecosystems (Daly and Cobb 1989). Most postmodern environmental ethicists 'naturalize' history, so that all human beings remain members of one earth community. If reconstructive postmodern environmental ethics has a constant theme, it is the criticality of sustainability (Oeschlaeger 1995). Affirmative postmodernists argue that all discourse is subject to the formal requirement of sustainability, because any cultural narrative that leads humans to claim authority to degrade either natural ecology or social ecology is not a viable strategy for life (Wright 1992).

Human knowledge gained over several millennia, through testing and conjecture and through observation and inference, has remained a powerful forté and it is a priceless legacy for human existence. Early humans, uncorrupted by greed, always 'knew' their habitat. Remaining embedded within the flora and fauna, climate and landscape, water and sky, they perceived

life as one that remained part of their surroundings. Their worldviews emerged out of that certainty. The Desana people of the northwestern Amazonia recognise the sun as their father and the earth as their mother (Reichel-Dolmatoff 1971). Maria Montessori, a revolutionary modern thinker, valued the interconnectedness of the universe and humankind and she reinforced the dictum that nothing can exist in isolation: "The stars, stones, life of all kinds, form a whole in relation to each other and so close is this relationship that we cannot understand a stone without some understanding of the great sun. No matter what we touch, an atom or a cell, we cannot explain it without knowledge of the universe. ... What am I? What is the task of humanity in this wonderful universe?"

ECOCENTRISM

Ecocentrism takes a stance exactly opposed to technocentrism, the latter being driven by anthropocentrism and utilitarianism (see Wawrzyniak 1997, for comments on utilitarianism). The discussion here will be limited to some of the explicitly non-anthropocentric approaches, acknowledging the value of non-human life and the non-living environment. Within this framework every organism is valuable and such a framework is grounded in the deep ecological or spiritual experience that nature and the self are but one (Capra 1996). In essence, the ecocentric worldview arises from a relational view of the human who is intimately and inseparably connected to nature (Birkeland et al. 1997); human society should, therefore, enshrine an ethic of responsibility and reciprocity in lieu of rights, by seeking a change in social structures and lifestyles adapting to or synchronizing with Earth's capabilities, rather than changing it to sustain humans. Human society should look at other species and ecosystems as having value beyond human usage and perceptions, and move beyond a human-centered and instrumentalist worldview (Miller 1994).

Leopold's *Land Ethic* (1949) is probably the pioneering strand of ecocentric thinking. The following statement from Leopold is candid: "A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise." Ecocentric thinkers reason that humans failed to identify and empathize with the rest of the nature because of the way they experience and interpret the world. The ecocentric thinkers believe that

the fundamental cultural disease is human chauvinism (or anthropocentrism), which has been the primary cause for the alienation from nature. The alienation must be overcome by a personal transformation, by subscription to an ecocentric perspective: expanding one's view – one's sense of self – to remain a part of nature. To harm nature is to harm humans, and a change in attitudes, behaviour, and ways is imperative. Ecocentric thinking aims to conserve what is left of the richness and diversity of life on Earth – including human cultural diversity – and therefore cannot be anti-human (Naess 1988). A related ethical view calls for the re-learning of ancient wisdom. This view relates to the suggestion that Gaia or some other overarching force shapes human culture and traditions to ensure that human activity remains within environmental borders, as it was in pre-industrial societies (Knudtson and Suzuki 1992).

This is not to deny the significance of cultural and political forces in achieving a changed world, however the starting point for cultural and political change is at the individual level. This point has been borne out by John Allen (Director, Center for Rural Community Revitalization and Development, Nebraska, USA) who addressed the 'needs' of the Nebraska community; Allen (1999) presents a pyramid model with economic well being at the apex. The starting point for this process, or the base of the pyramid, is the need to build individual confidence and skills to participate in social change. While Allen's context for change management is based on the development of regional sustainability, the fact remains that for change to happen it must embrace individual perceptions in the first instance.

Human life feeds, thrives and exists on purpose. Scientific evidence suggests that the universe is purposive in that its components exist by virtue of freedom, which allows them a degree of self-determination (Birch 1990). According to this thinking, the whole of the universe and its entities look more like life than inanimate matter; consequently, the recognizable picture is no longer that of a machine, but of an organism – the latter lively and vibrant. Failure to see the world in ecological or organic terms arises from the delusion that humans reign over everything. The modern worldview, born in the 16th century, dominates human thinking to this day and it tends to interpret everything from the bottom up. The universe is seen in terms of building blocks: and what emerges at the end is a contrivance. This is a tragic consequence of the extended modern worldview. Humans have overlooked, to their misfortune, that to live is to feel, to think, and to act.

ECOLOGICAL AGRICULTURE — WHAT IS IT?

The pressures of a continuously growing demand for food are, in some instances at least, beginning to undermine the ecological foundations of the planet, because of the emphasis on world food economy, which is based on world food security. Agriculture did not come about as a major and dramatic revolution, although often it is referred as the Neolithic revolution. It was a slow learning process across several thousands of years of trial and error (Smith 1998). The desire to raise certain crop varieties led early societies to produce more than the need, and hence to consider commerce. That is when human descent from the status of a natural population began. Commerce placed humans in the downward and drowning spiral of desire, which, in several instances exacerbated into greed. One such development came to be known as the green revolution.

Even at a policy-making level, alternatives to conventional agriculture are now being considered seriously. The alternative approaches capitalize on the knowledge, skills, techniques, and methods of both the past and the present in order to build an agricultural system, which will serve as the foundation of a more holistic, balanced, and humane civilization. The notion of ecological agriculture, an alternative agricultural system (Merrill 1983), calls on us to have profound respect for and a deep desire to understand nature and the laws that govern nature; it asks us to play a co-operative role with nature, to consciously preserve and protect the soil, recognizing fully that it is a complex, living, fragile entity. Farmers should have a livelihood, but the more important imperative in agriculture will be to provide the optimum nutrition to humankind. The emphasis here will be on the optimum and not on the stress-inducing maximum level of production and on the recognition that each farm is unique so that the methods of farming need to be tailored to suit the individuality of each farm. When used diligently and thoughtfully, this alternative process will sustain optimum production indefinitely.

A number of different terminologies exist (Boeringa 1980, Hill 1982, Merrill 1983), although some terms have fallen out of use and others are considered emotionally unacceptable. The preferred term seems to be 'ecological agriculture', which reflects the general synonymy, and its practice echoes Merrill's (1983) notion of an alternative agricultural system. Further, ecology is a unique discipline in that it is eclectic, interdisciplinary, and seeks to deal with the 'wholes' rather than the parts. Extensive research has

been conducted in testing and trialling this practice (see Merrill 1983, for several references).

Ecological agriculture is holistic. This characteristic differentiates it from conventional agriculture. Holism arises logically as a consequence of ecological agriculture's perception that science and its product, technology, are a means to an end. Subscribers to ecological agriculture believe that nature encompasses everything else in a state of dynamic equilibrium. Holistic thinkers believe that in the long run, nature attempts to resist any effort to change her, and that ultimately humans have no alternative, but to co-operate willingly or otherwise (Carson 1963). The role of humankind in this context is therefore one of 'membership'. We, therefore, reject the use of the terms 'custodianship', 'stewardship', and 'trusteeship'.

Ecological agriculture as a component of a sustainable global community will ask us all to align ourselves and our practices more with nature, and not depend so unthinkingly on technology. This ethos will take root in parallel with a reawakening of our belief in the importance of the family and a strong rural-based economy. A family farmer is subconsciously aware of and remains attuned to the realization that he/she is an integral part of the great web of nature and the delicate ecosystems that he/she works with. The family farmer co-works with nature building the soil rather than exploiting it. Ecological agricultural practice is founded on the idea that family farmers are not only the backbone of a society, but, more critically, they will be responsible and will remain dedicated to co-operating with the soil and nature. Such an ability to produce one's basic food requirement will be critical for the future of the human species.

CONCLUSION

We, the authors, are conscious that this article is neither comprehensive nor complete. The critical questions to us are: Where does humankind stand in the natural scheme of things?, What is the key purpose of the human being?, How should humans engage with the world in the near future and in the distant future?, Where do rights stop and responsibilities start?, Have the humans acted with any sense of wisdom so far?. Many similar questions should arise in the mind of the reader. The process of questioning and challenging will lead to clarity of purpose. What is extremely critical will be for the human beings to be honest, answering their consciences.

Suzuki's (1990) words are pertinent and summarize our concerns: "Increase in human numbers and the tremendous growth in technology and its utilization has generated the environmental crisis today. American biologists Edward Wilson and Paul Ehrlich have been reiterating that we need a profound shift in attitude towards the natural world. The change has to be necessarily in the spiritual value we place on other organisms. We do perceive a gut feeling that something is drastically wrong with our obsession with consumption and profit, and progress and development. Unfortunately, we want to push that gut feeling onto the back burner, since we are unable to sail out of the obsession with material gains and a comfortable lifestyle. A soft voice that holds a committed opinion does speak within us and we continuously reject the tone of that gut feeling. When we decide to validate that worldview more seriously and vigorously, we could re-prioritize our life criteria and return to a valuable balance with nature and environment. The irony is that such pearls of wisdom seem to be confined to the thinking of the most-oppressed people and deprived groups of the world."

Is the biological species *Homo sapiens* evolving into a new *Homo proteus*, the 'shapechanger' human, with a different set of characteristics, as described by Wilson (1999)? Will *Homo proteus* be able to design an alternative and bring about an ecocentric future by being earnest and determined? Maybe not; the opposing force of self-interest has driven the cavalcade of human progress through every barrier and depression so far. Even environmentalists are often heard arguing for their cause because the human species needs nature for its survival. Self-interest is unlikely to protect the world adequately, especially if human ingenuity replaces natural services with technology (Baxter 1999).

Do we humans have the necessary modesty to look at ourselves as just one species of the biosphere? Will that modesty enable us to recognize the strands of continuity between everything else and us? Do we have the courage and strength to accept that the non-human world is also worthy of serious consideration? And will such a consideration enable us to restore order to our social, economic, and political systems? If our answers to these questions are in the affirmative, then confidently we can move towards the achievement of a mental and emotional framework that will readily democratize society and its food production activity; and that will constructively align the most potent natural synergies with complementary human action.

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